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<120> Methods of Treating Diseases Responsive to Induction of Apoptosis and Screening Assays

<130> 1735.0870001

<150> 60/463,687
<151> 2003-04-18

<160> 31

<170> PatentIn version 3.2

<210> 1
<211> 434
<212> PRT
<213> Homo sapiens

<220>
<223> cargo selection protein (mannose 6 phosphate receptor binding protein)

<400> 1

Met Ser Ala Asp Gly Ala Glu Ala Asp Gly Ser Thr Gln Val Thr Val
1 5 10 15

Glu Glu Pro Val Gln Gln Pro Ser Val Val Asp Arg Val Ala Ser Met
20 25 30

Pro Leu Ile Ser Ser Thr Cys Asp Met Val Ser Ala Ala Tyr Ala Ser
35 40 45

Thr Lys Glu Ser Tyr Pro His Ile Lys Thr Val Cys Asp Ala Ala Glu
50 55 60

Lys Gly Val Arg Thr Leu Thr Ala Ala Val Ser Gly Ala Gln Pro
65 70 75 80

Ile Leu Ser Lys Leu Glu Pro Gln Ile Ala Ser Ala Ser Glu Tyr Ala
85 90 95

His Arg Gly Leu Asp Lys Leu Glu Glu Asn Leu Pro Ile Leu Gln Gln
100 105 110

Pro Thr Glu Lys Val Leu Ala Asp Thr Lys Glu Leu Val Ser Ser Lys
115 120 125

Val Ser Gly Ala Gln Glu Met Val Ser Ser Ala Lys Asp Thr Val Ala
130 135 140

Thr Gln Leu Ser Glu Ala Val Asp Ala Thr Arg Gly Ala Val Gln Ser
145 150 155 160

Gly Val Asp Lys Thr Lys Ser Val Val Thr Gly Gly Val Gln Ser Val
165 170 175

Met Gly Ser Arg Leu Gly Gln Met Val Leu Ser Gly Val Asp Thr Val
180 185 190

Leu Gly Lys Ser Glu Glu Trp Ala Asp Asn His Leu Pro Leu Thr Asp
195 200 205

Ala Glu Leu Ala Arg Ile Ala Thr Ser Leu Asp Gly Phe Asp Val Ala
210 215 220

Ser Val Gln Gln Gln Arg Gln Glu Gln Ser Tyr Phe Val Arg Leu Gly
225 230 235 240

Ser Leu Ser Glu Arg Leu Arg Gln His Ala Tyr Glu His Ser Leu Gly
245 250 255

Lys Leu Arg Ala Thr Lys Gln Arg Ala Gln Glu Ala Leu Leu Gln Leu
260 265 270

Ser Gln Val Leu Ser Leu Met Glu Thr Val Lys Gln Gly Val Asp Gln
275 280 285

Lys Leu Val Glu Gly Gln Glu Lys Leu His Gln Met Trp Leu Ser Trp
290 295 300

Asn Gln Lys Gln Leu Gln Gly Pro Glu Lys Glu Pro Pro Lys Pro Glu
305 310 315 320

Gln Val Glu Ser Arg Ala Leu Thr Met Phe Arg Asp Ile Ala Gln Gln
325 330 335

Leu Gln Ala Thr Cys Thr Ser Leu Gly Ser Ser Ile Gln Gly Leu Pro

340

345

350

Thr Asn Val Lys Asp Gln Val Gln Gln Ala Arg Arg Gln Val Glu Asp
355 360 365

Leu Gln Ala Thr Phe Ser Ser Ile His Ser Phe Gln Asp Leu Ser Ser
370 375 380

Ser Ile Leu Ala Gln Ser Arg Glu Arg Val Ala Ser Ala Arg Glu Ala
385 390 395 400

Leu Asp His Met Val Glu Tyr Val Ala Gln Asn Thr Pro Val Thr Trp
405 410 415

Leu Val Gly Pro Phe Ala Pro Gly Ile Thr Glu Lys Ala Pro Glu Glu
420 425 430

Lys Lys

<210> 2
<211> 434
<212> PRT
<213> Homo sapiens

<220>
<223> cargo selection protein (mannose 6 phosphate receptor binding protein)

<400> 2

Met Ser Ala Asp Gly Ala Glu Ala Asp Gly Ser Thr Gln Val Thr Val
1 5 10 15

Glu Glu Pro Val Gln Gln Pro Ser Val Val Asp Arg Val Ala Ser Met
20 25 30

Pro Leu Ile Ser Ser Thr Cys Asp Met Val Ser Ala Ala Tyr Ala Ser
35 40 45

Thr Lys Glu Ser Tyr Pro His Ile Lys Thr Val Cys Asp Ala Ala Glu
50 55 60

Lys Gly Val Arg Thr Leu Thr Ala Ala Ala Val Ser Gly Ala Gln Pro
65 70 75 80

Ile Leu Ser Lys Leu Glu Pro Gln Ile Ala Ser Ala Ser Glu Tyr Ala
85 90 95

His Arg Gly Leu Asp Lys Leu Glu Glu Asn Leu Pro Ile Leu Gln Gln
100 105 110

Pro Thr Glu Lys Val Leu Ala Asp Thr Lys Glu Leu Val Ser Ser Lys
115 120 125

Val Ser Gly Ala Gln Glu Met Val Ser Ser Ala Lys Asp Thr Val Ala
130 135 140

Thr Gln Leu Ser Glu Ala Val Asp Ala Thr Arg Gly Ala Val Gln Ser
145 150 155 160

Gly Val Asp Lys Thr Lys Ser Val Val Thr Gly Gly Val Gln Ser Val
165 170 175

Met Gly Ser Arg Leu Gly Gln Met Val Leu Ser Gly Val Asp Thr Val
180 185 190

Leu Gly Lys Ser Glu Glu Trp Ala Asp Asn His Leu Pro Leu Thr Asp
195 200 205

Ala Glu Leu Ala Arg Ile Ala Thr Ser Leu Asp Gly Phe Asp Val Ala
210 215 220

Ser Val Gln Gln Gln Arg Gln Glu Gln Ser Tyr Phe Val Arg Leu Gly
225 230 235 240

Ser Leu Ser Glu Arg Leu Arg Gln His Ala Tyr Glu His Ser Leu Gly
245 250 255

Lys Leu Arg Ala Thr Lys Gln Arg Ala Gln Glu Ala Leu Leu Gln Leu
260 265 270

Ser Gln Ala Leu Ser Leu Met Glu Thr Val Lys Gln Gly Val Asp Gln
275 280 285

Lys Leu Val Glu Gly Gln Glu Lys Leu His Gln Met Trp Leu Ser Trp
290 295 300

Asn Gln Lys Gln Leu Gln Gly Pro Glu Lys Glu Pro Pro Lys Pro Glu
305 310 315 320

Gln Val Glu Ser Arg Ala Leu Thr Met Phe Arg Asp Ile Ala Gln Gln
325 330 335

Leu Gln Ala Thr Cys Thr Ser Leu Gly Ser Ser Ile Gln Gly Leu Pro
340 345 350

Thr Asn Val Lys Asp Gln Val Gln Gln Ala Arg Arg Gln Val Glu Asp
355 360 365

Leu Gln Ala Thr Phe Ser Ser Ile His Ser Phe Gln Asp Leu Ser Ser
370 375 380

Ser Ile Leu Ala Gln Ser Arg Glu Arg Val Ala Ser Ala Arg Glu Ala
385 390 395 400

Leu Asp His Met Val Glu Tyr Val Ala Gln Asn Thr Pro Val Thr Trp
405 410 415

Leu Val Gly Pro Phe Ala Pro Gly Ile Thr Glu Lys Ala Pro Glu Glu
420 425 430

Lys Lys

<210> 3
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<212> PRT
<213> Homo sapiens

<220>
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<400> 3

Met Ser Ala Asp Gly Ala Glu Ala Asp Gly Ser Thr Gln Val Thr Val
1 5 10 15

Glu Glu Pro Val Gln Gln Pro Ser Val Val Asp Arg Val Ala Ser Met
20 25 30

Pro Leu Ile Ser Ser Thr Cys Asp Met Val Ser Ala Ala Tyr Ala Ser
35 40 45

Thr Lys Glu Ser Tyr Pro His Val Lys Thr Val Cys Asp Ala Ala Glu
50 55 60

Lys Gly Val Arg Thr Leu Thr Ala Ala Val Ser Trp Ala Gln Pro
65 70 75 80

Ile Leu Ser Lys Leu Glu Pro Gln Ile Ala Ser Ala Ser Glu Tyr Ala

85

90

95

His Arg Gly Leu Asp Lys Leu Glu Glu Asn Leu Pro Met Leu Arg Gln
100 105 110

Pro Thr Glu Lys Val Leu Ala Asp Thr Lys Glu Leu Val Ser Ser Lys
115 120 125

Val Ser Gly Ala Gln Glu Met Val Ser Ser Ala Lys Asp Thr Val Ala
130 135 140

Thr Gln Leu Ser Glu Ala Val Asp Ala Thr Arg Gly Ala Val Gln Ser
145 150 155 160

Gly Val Asp Lys Thr Lys Ser Val Val Thr Gly Gly Val Gln Ser Val
165 170 175

Met Gly Ser Arg Leu Gly Gln Met Val Leu Ser Gly Val Asp Thr Val
180 185 190

Leu Gly Lys Ser Glu Glu Trp Ala Asp Asn His Leu Pro Leu Thr Asp
195 200 205

Ala Glu Leu Ala Arg Ile Ala Thr Ser Leu Asp Gly Phe Asp Val Ala
210 215 220

Ser Val Gln Gln Gln Arg Gln Glu Gln Ser Tyr Phe Val Arg Leu Gly
225 230 235 240

Ser Leu Ser Glu Arg Leu Arg Gln His Ala Tyr Glu His Ser Leu Gly
245 250 255

Lys Leu Arg Ala Thr Lys Gln Arg Ala Gln Glu Ala Leu Leu Gln Leu
260 265 270

Ser Gln Ala Leu Ser Leu Met Glu Thr Val Lys Gln Gly Val Asp Gln
275 280 285

Lys Leu Val Glu Gly Gln Glu Lys Leu His Gln Met Trp Leu Ser Trp
290 295 300

Asn Gln Lys Gln Leu Gln Gly Pro Glu Lys Glu Pro Pro Lys Pro Glu
305 310 315 320

Gln Val Glu Ser Arg Ala Leu Thr Met Phe Arg Asp Ile Ala Gln Gln
325 330 335

Leu Gln Ala Thr Cys Thr Ser Leu Gly Ser Ser Ile Gln Gly Leu Pro
340 345 350

Thr Asn Val Lys Asp Gln Val Gln Gln Ala Arg Arg Gln Val Glu Asp
355 360 365

Leu Gln Ala Thr Phe Ser Ser Ile His Ser Phe Gln Asp Leu Ser Ser
370 375 380

Ser Ile Leu Ala Gln Ser Arg Glu Arg Val Ala Ser Ala Arg Glu Ala
385 390 395 400

Leu Asp His Met Val Glu Tyr Val Ala Gln Asn Thr Pro Val Thr Trp
405 410 415

Leu Val Gly Pro Phe Ala Pro Gly Ile Thr Glu Lys Ala Pro Glu Glu
420 425 430

Lys Lys

<210> 4
<211> 251
<212> PRT
<213> Homo sapiens

<220>
<223> placental protein 17a2; PP17a2
<400> 4

Met Val Leu Ser Gly Val Asp Thr Val Leu Gly Lys Ser Glu Glu Trp
1 5 10 15

Ala Asp Asn His Leu Pro Leu Thr Asp Ala Glu Leu Ala Arg Ile Ala
20 25 30

Thr Ser Leu Asp Gly Phe Asp Val Ala Ser Val Gln Gln Gln Arg Gln
35 40 45

Glu Gln Ser Tyr Phe Val Arg Leu Gly Ser Leu Ser Glu Arg Leu Arg
50 55 60

Gln His Ala Tyr Glu His Ser Leu Gly Lys Leu Arg Ala Thr Lys Gln
65 70 75 80

Arg Ala Gln Glu Ala Leu Leu Gln Leu Ser Gln Ala Leu Ser Leu Met
85 90 95

Glu Thr Val Lys Gln Gly Val Asp Gln Lys Leu Val Glu Gly Gln Glu
100 105 110

Lys Leu His Gln Met Trp Leu Ser Trp Asn Gln Lys Gln Leu Gln Gly
115 120 125

Pro Glu Lys Glu Pro Pro Lys Pro Glu Gln Val Glu Ser Arg Ala Leu
130 135 140

Thr Met Phe Arg Asp Ile Ala Gln Gln Leu Gln Ala Thr Cys Thr Ser
145 150 155 160

Leu Gly Ser Ser Ile Gln Gly Leu Pro Thr Asn Val Lys Asp Gln Val
165 170 175

Gln Gln Ala Arg Arg Gln Val Glu Asp Leu Gln Ala Thr Phe Ser Ser
180 185 190

Ile His Ser Phe Gln Asp Leu Ser Ser Ser Ile Leu Ala Gln Ser Arg
195 200 205

Glu Arg Val Ala Ser Ala Arg Glu Ala Leu Asp His Met Val Glu Tyr
210 215 220

Val Ala Gln Asn Thr Pro Val Thr Trp Leu Val Gly Pro Phe Ala Pro
225 230 235 240

Gly Ile Thr Glu Lys Ala Pro Glu Glu Lys Lys
245 250

<210> 5
<211> 434
<212> PRT
<213> Homo sapiens

<220>
<223> cargo selection protein (mannose 6 phosphate receptor binding protein)

<400> 5

Met Ser Ala Asp Gly Ala Glu Ala Asp Gly Ser Thr Gln Val Thr Val
1 5 10 15

Glu Glu Pro Val Gln Gln Pro Ser Val Val Asp Arg Val Ala Ser Met

20

25

30

Pro Leu Ile Ser Ser Thr Cys Asp Met Val Ser Ala Ala Tyr Ala Ser
35 40 45

Thr Lys Glu Ser Tyr Pro His Ile Lys Thr Val Cys Asp Ala Ala Glu
50 55 60

Lys Gly Val Arg Thr Leu Thr Ala Ala Val Ser Gly Ala Gln Pro
65 70 75 80

Ile Leu Ser Lys Leu Glu Pro Gln Ile Ala Ser Ala Ser Glu Tyr Ala
85 90 95

His Arg Gly Leu Asp Lys Leu Glu Glu Asn Leu Pro Ile Leu Gln Gln
100 105 110

Pro Thr Glu Lys Val Leu Ala Asp Thr Lys Glu Leu Val Ser Ser Lys
115 120 125

Val Ser Gly Ala Gln Glu Met Val Ser Ser Ala Lys Asp Thr Val Ala
130 135 140

Thr Gln Leu Ser Glu Ala Val Asp Ala Thr Arg Gly Ala Val Gln Ser
145 150 155 160

Gly Val Asp Lys Thr Lys Ser Val Val Thr Gly Gly Val Gln Ser Val
165 170 175

Met Gly Ser Arg Leu Gly Gln Met Val Leu Ser Gly Val Asp Thr Val
180 185 190

Leu Gly Lys Ser Glu Glu Trp Ala Asp Asn His Leu Pro Leu Thr Asp
195 200 205

Ala Glu Leu Ala Arg Ile Ala Thr Ser Leu Asp Gly Phe Asp Val Ala
210 215 220

Ser Val Gln Gln Gln Arg Gln Glu Gln Ser Tyr Phe Val Arg Leu Gly
225 230 235 240

Ser Leu Ser Glu Arg Leu Arg Gln His Ala Tyr Glu His Ser Leu Gly
245 250 255

Lys Leu Arg Ala Thr Lys Gln Arg Ala Gln Glu Ala Leu Leu Gln Leu
260 265 270

Ser Gln Ala Leu Ser Leu Met Glu Thr Val Lys Gln Gly Val Asp Gln
275 280 285

Lys Leu Val Glu Gly Gln Glu Lys Leu His Gln Met Trp Leu Ser Trp
290 295 300

Asn Gln Lys Gln Leu Gln Gly Pro Glu Lys Glu Pro Pro Lys Pro Glu
305 310 315 320

Gln Val Glu Ser Arg Ala Leu Thr Met Phe Arg Asp Ile Ala Gln Gln
325 330 335

Leu Gln Ala Thr Cys Thr Ser Leu Gly Ser Ser Ile Gln Gly Leu Pro
340 345 350

Thr Asn Val Lys Asp Gln Val Gln Gln Ala Arg Arg Gln Val Glu Asp
355 360 365

Leu Gln Ala Thr Phe Ser Ser Ile His Ser Phe Gln Asp Leu Ser Ser
370 375 380

Ser Ile Leu Ala Gln Ser Arg Glu Arg Val Ala Ser Ala Arg Glu Ala
385 390 395 400

Leu Asp His Met Val Glu Tyr Val Ala Gln Asn Thr Pro Val Thr Trp
405 410 415

Leu Val Gly Pro Phe Ala Pro Gly Ile Thr Glu Lys Ala Pro Glu Glu
420 425 430

Lys Lys

<210> 6
<211> 434
<212> PRT
<213> Homo sapiens

<220>
<223> cargo selection protein (mannose 6 phosphate receptor binding protein)

<400> 6

Met Ser Ala Asp Gly Ala Glu Ala Asp Gly Ser Thr Gln Val Thr Val
1 5 10 15

Glu Glu Pro Val Gln Gln Pro Ser Val Val Asp Arg Val Ala Ser Met
20 25 30

Pro Leu Ile Ser Ser Thr Cys Asp Met Val Ser Ala Ala Tyr Ala Ser
35 40 45

Thr Lys Glu Ser Tyr Pro His Ile Lys Thr Val Cys Asp Ala Ala Glu
50 55 60

Lys Gly Val Arg Thr Leu Thr Ala Ala Val Ser Gly Ala Gln Pro
65 70 75 80

Ile Leu Ser Lys Leu Glu Pro Gln Ile Ala Ser Ala Ser Glu Tyr Ala
85 90 95

His Arg Gly Leu Asp Lys Leu Glu Glu Asn Leu Pro Ile Leu Gln Gln
100 105 110

Pro Thr Glu Lys Val Leu Ala Asp Thr Lys Glu Leu Val Ser Ser Lys
115 120 125

Val Ser Gly Ala Gln Glu Met Val Ser Ser Ala Lys Asp Thr Val Ala
130 135 140

Thr Gln Leu Ser Glu Ala Val Asp Ala Thr Arg Gly Ala Val Gln Ser
145 150 155 160

Gly Val Asp Lys Thr Lys Ser Val Val Thr Gly Gly Val Gln Ser Val
165 170 175

Met Gly Ser Arg Leu Gly Gln Met Val Leu Ser Gly Val Asp Thr Val
180 185 190

Leu Gly Lys Ser Glu Glu Trp Ala Asp Asn His Leu Pro Leu Thr Asp
195 200 205

Ala Glu Leu Ala Arg Ile Ala Thr Ser Leu Asp Gly Phe Asp Val Ala
210 215 220

Ser Val Gln Gln Gln Arg Gln Glu Gln Ser Tyr Phe Val Arg Leu Gly
225 230 235 240

Ser Leu Ser Glu Arg Leu Arg Gln His Ala Tyr Glu His Ser Leu Gly
245 250 255

Lys Leu Arg Ala Thr Lys Gln Arg Ala Gln Glu Ala Leu Leu Gln Leu
260 265 270

Ser Gln Ala Leu Ser Leu Met Glu Thr Val Lys Gln Gly Val Asp Gln
275 280 285

Lys Leu Val Glu Gly Gln Glu Lys Leu His Gln Met Trp Leu Ser Trp
290 295 300

Asn Gln Lys Gln Leu Gln Gly Pro Glu Lys Glu Pro Pro Lys Pro Glu
305 310 315 320

Gln Val Glu Ser Arg Ala Leu Thr Met Phe Arg Asp Ile Ala Gln Gln
325 330 335

Leu Gln Ala Thr Cys Thr Ser Leu Gly Ser Ser Ile Gln Gly Leu Pro
340 345 350

Thr Asn Val Lys Asp Gln Val Gln Gln Ala Arg Arg Gln Val Glu Asp
355 360 365

Leu Gln Ala Thr Phe Ser Ser Ile His Ser Phe Gln Asp Leu Ser Ser
370 375 380

Ser Ile Leu Ala Gln Ser Arg Glu Arg Val Ala Ser Ala Arg Glu Ala
385 390 395 400

Leu Asp His Met Val Glu Tyr Val Ala Gln Asn Thr Pro Val Thr Trp
405 410 415

Leu Val Gly Pro Phe Ala Pro Gly Ile Thr Glu Lys Ala Pro Glu Glu
420 425 430

Lys Lys

<210> 7
<211> 434
<212> PRT
<213> Homo sapiens

<220>
<223> cargo selection protein TIP47

<400> 7

Met Ser Ala Asp Gly Ala Glu Ala Asp Gly Ser Thr Gln Val Thr Val
1 5 10 15

Glu Glu Pro Val Gln Gln Pro Ser Val Val Asp Arg Val Ala Ser Met
20 25 30

Pro Leu Ile Ser Ser Thr Cys Asp Met Val Ser Ala Ala Tyr Ala Ser
35 40 45

Thr Lys Glu Ser Tyr Pro His Val Lys Thr Val Cys Asp Ala Ala Glu
50 55 60

Lys Gly Val Arg Thr Leu Thr Ala Ala Ala Val Ser Gly Ala Gln Pro
65 70 75 80

Ile Leu Ser Lys Leu Glu Pro Gln Ile Ala Ser Ala Ser Glu Tyr Ala
85 90 95

His Arg Gly Leu Asp Lys Leu Glu Glu Asn Leu Pro Ile Leu Gln Gln
100 105 110

Pro Thr Glu Lys Val Leu Ala Asp Thr Lys Glu Leu Val Ser Ser Lys
115 120 125

Val Ser Gly Ala Gln Glu Met Val Ser Ser Ala Lys Asp Thr Val Ala
130 135 140

Thr Gln Leu Ser Glu Ala Val Asp Ala Thr Arg Gly Ala Val Gln Ser
145 150 155 160

Gly Val Asp Lys Thr Lys Ser Val Val Thr Gly Gly Val Gln Ser Val
165 170 175

Met Gly Ser Arg Leu Gly Gln Met Val Leu Ser Gly Val Asp Thr Val
180 185 190

Leu Gly Lys Ser Glu Glu Trp Ala Asp Asn His Leu Pro Leu Thr Asp
195 200 205

Ala Glu Leu Ala Arg Ile Ala Thr Ser Leu Asp Gly Phe Asp Val Ala
210 215 220

Ser Val Gln Gln Gln Arg Gln Glu Gln Ser Tyr Phe Val Arg Leu Gly
225 230 235 240

Ser Leu Ser Glu Arg Leu Arg Gln His Ala Tyr Glu His Ser Leu Gly
245 250 255

Lys Leu Arg Ala Thr Lys Gln Arg Ala Gln Glu Ala Leu Leu Gln Leu
260 265 270

Ser Gln Ala Leu Ser Leu Met Glu Thr Val Lys Gln Gly Val Asp Gln
275 280 285

Lys Leu Val Glu Gly Gln Glu Lys Leu His Gln Met Trp Leu Ser Trp
290 295 300

Asn Gln Lys Gln Leu Gln Gly Pro Glu Lys Glu Pro Pro Lys Pro Glu
305 310 315 320

Gln Val Glu Ser Arg Ala Leu Thr Met Phe Arg Asp Ile Ala Gln Gln
325 330 335

Leu Gln Ala Thr Cys Thr Ser Leu Gly Ser Ser Ile Gln Gly Leu Pro
340 345 350

Thr Asn Val Lys Asp Gln Val Gln Gln Ala Arg Arg Gln Val Glu Asp
355 360 365

Leu Gln Ala Thr Phe Ser Ser Ile His Ser Phe Gln Asp Leu Ser Ser
370 375 380

Ser Ile Leu Ala Gln Ser Arg Glu Arg Val Ala Ser Ala Arg Glu Ala
385 390 395 400

Leu Asp His Met Val Glu Tyr Val Ala Gln Asn Thr Pro Val Thr Trp
405 410 415

Leu Val Gly Pro Phe Ala Pro Gly Ile Thr Glu Lys Ala Pro Glu Glu
420 425 430

Lys Lys

<210> 8
<211> 434
<212> PRT
<213> Homo sapiens

<220>
<223> Cargo selection protein (mannose 6 phosphate receptor binding protein)

<400> 8

Met Ser Ala Asp Gly Ala Glu Ala Asp Gly Ser Thr Gln Val Thr Val
1 5 10 15

Glu Glu Pro Val Gln Gln Pro Ser Val Val Asp Arg Val Ala Ser Met
20 25 30

Pro Leu Ile Ser Ser Thr Cys Asp Met Val Ser Ala Ala Tyr Ala Ser
35 40 45

Thr Lys Glu Ser Tyr Pro His Val Lys Thr Val Cys Asp Ala Ala Glu
50 55 60

Lys Gly Val Arg Thr Leu Thr Ala Ala Val Ser Gly Ala Gln Pro
65 70 75 80

Ile Leu Ser Lys Leu Glu Pro Gln Ile Ala Ser Ala Ser Glu Tyr Ala
85 90 95

His Arg Gly Leu Asp Lys Leu Glu Glu Asn Leu Pro Ile Leu Gln Gln
100 105 110

Pro Thr Glu Lys Val Leu Ala Asp Thr Lys Glu Leu Val Ser Ser Lys
115 120 125

Val Ser Gly Ala Gln Glu Met Val Ser Ser Ala Lys Asp Thr Val Ala
130 135 140

Thr Gln Leu Ser Glu Ala Val Asp Ala Thr Arg Gly Ala Val Gln Ser
145 150 155 160

Gly Val Asp Lys Thr Lys Ser Val Val Thr Gly Gly Val Gln Ser Val
165 170 175

Met Gly Ser Arg Leu Gly Gln Met Val Leu Ser Gly Val Asp Thr Val
180 185 190

Leu Gly Lys Ser Glu Glu Trp Ala Asp Asn His Leu Pro Leu Thr Asp
195 200 205

Ala Glu Leu Ala Arg Ile Ala Thr Ser Leu Asp Gly Phe Asp Val Ala
210 215 220

Ser Val Gln Gln Gln Arg Gln Glu Gln Ser Tyr Phe Val Arg Leu Gly
225 230 235 240

Ser Leu Ser Glu Arg Leu Arg Gln His Ala Tyr Glu His Ser Leu Gly

245

250

255

Lys Leu Arg Ala Thr Lys Gln Arg Ala Gln Glu Ala Leu Leu Gln Leu
260 265 270

Ser Gln Ala Leu Ser Leu Met Glu Thr Val Lys Gln Gly Val Asp Gln
275 280 285

Lys Leu Val Glu Gly Gln Glu Lys Leu His Gln Met Trp Leu Ser Trp
290 295 300

Asn Gln Lys Gln Leu Gln Gly Pro Glu Lys Glu Pro Pro Lys Pro Glu
305 310 315 320

Gln Val Glu Ser Arg Ala Leu Thr Met Phe Arg Asp Ile Ala Gln Gln
325 330 335

Leu Gln Ala Thr Cys Thr Ser Leu Gly Ser Ser Ile Gln Gly Leu Pro
340 345 350

Thr Asn Val Lys Asp Gln Val Gln Gln Ala Arg Arg Gln Val Glu Asp
355 360 365

Leu Gln Ala Thr Phe Ser Ser Ile His Ser Phe Gln Asp Leu Ser Ser
370 375 380

Ser Ile Leu Ala Gln Ser Arg Glu Arg Val Ala Ser Ala Arg Glu Ala
385 390 395 400

Leu Asp His Met Val Glu Tyr Val Ala Gln Asn Thr Pro Val Thr Trp
405 410 415

Leu Val Gly Pro Phe Ala Pro Gly Ile Thr Glu Lys Ala Pro Glu Glu
420 425 430

Lys Lys

<210> 9
<211> 434
<212> PRT
<213> Homo sapiens

<220>
<223> cargo selection protein (mannose 6 phosphate receptor binding protein)

<400> 9

Met Ser Ala Asp Gly Ala Glu Ala Asp Gly Ser Thr Gln Val Thr Val
1 5 10 15

Glu Glu Pro Val Gln Gln Pro Ser Val Val Asp Arg Val Ala Ser Met
20 25 30

Pro Leu Ile Ser Ser Thr Cys Asp Met Val Ser Ala Ala Tyr Ala Ser
35 40 45

Thr Lys Glu Ser Tyr Pro His Val Lys Thr Val Cys Asp Ala Ala Glu
50 55 60

Lys Gly Val Arg Thr Leu Thr Ala Ala Ala Val Ser Gly Ala Gln Pro
65 70 75 80

Ile Leu Ser Lys Leu Glu Pro Gln Ile Ala Ser Ala Ser Glu Tyr Ala
85 90 95

His Arg Gly Leu Asp Lys Leu Glu Glu Asn Leu Pro Ile Leu Gln Gln
100 105 110

Pro Thr Glu Lys Val Leu Ala Asp Thr Lys Glu Leu Val Ser Ser Lys
115 120 125

Val Ser Gly Ala Gln Glu Met Val Ser Ser Ala Lys Asp Thr Val Ala
130 135 140

Thr Gln Leu Ser Glu Ala Val Asp Ala Thr Arg Gly Ala Val Gln Ser
145 150 155 160

Gly Val Asp Lys Thr Lys Ser Val Val Thr Gly Gly Val Gln Ser Val
165 170 175

Met Gly Ser Arg Leu Gly Gln Met Val Leu Ser Gly Val Asp Thr Val
180 185 190

Leu Gly Lys Ser Glu Glu Trp Ala Asp Asn His Leu Pro Leu Thr Asp
195 200 205

Ala Glu Leu Ala Arg Ile Ala Thr Ser Leu Asp Gly Phe Asp Val Ala
210 215 220

Ser Val Gln Gln Gln Arg Gln Glu Gln Ser Tyr Phe Val Arg Leu Gly
225 230 235 240

Ser Leu Ser Glu Arg Leu Arg Gln His Ala Tyr Glu His Ser Leu Gly
245 250 255

Lys Leu Arg Ala Thr Lys Gln Arg Ala Gln Glu Ala Leu Leu Gln Leu
260 265 270

Ser Gln Ala Leu Ser Leu Met Glu Thr Val Lys Gln Gly Val Asp Gln
275 280 285

Lys Leu Val Glu Gly Gln Glu Lys Leu His Gln Met Trp Leu Ser Trp
290 295 300

Asn Gln Lys Gln Leu Gln Gly Pro Glu Lys Glu Pro Pro Lys Pro Glu
305 310 315 320

Gln Val Glu Ser Arg Ala Leu Thr Met Phe Arg Asp Ile Ala Gln Gln
325 330 335

Leu Gln Ala Thr Cys Thr Ser Leu Gly Ser Ser Ile Gln Gly Leu Pro
340 345 350

Thr Asn Val Lys Asp Gln Val Gln Gln Ala Arg Arg Gln Val Glu Asp
355 360 365

Leu Gln Ala Thr Phe Ser Ser Ile His Ser Phe Gln Asp Leu Ser Ser
370 375 380

Ser Ile Leu Ala Gln Ser Arg Glu Arg Val Ala Ser Ala Arg Glu Ala
385 390 395 400

Leu Asp His Met Val Glu Tyr Val Ala Gln Asn Thr Pro Val Thr Trp
405 410 415

Leu Val Gly Pro Phe Ala Pro Gly Ile Thr Glu Lys Ala Pro Glu Glu
420 425 430

Lys Lys

<210> 10
<211> 251
<212> PRT
<213> Homo sapiens

<220>
<223> placental protein 17a1; PP17a1

<400> 10

Met Val Leu Ser Gly Val Asp Thr Val Leu Gly Lys Ser Glu Glu Trp
1 5 10 15

Ala Asp Asn His Leu Pro Leu Thr Asp Ala Glu Leu Ala Arg Ile Ala
20 25 30

Thr Ser Leu Asp Gly Phe Asp Val Ala Ser Val Gln Gln Gln Arg Gln
35 40 45

Glu Gln Ser Tyr Phe Val Arg Leu Gly Ser Leu Ser Glu Arg Leu Arg
50 55 60

Gln His Ala Tyr Glu His Ser Leu Gly Lys Leu Arg Ala Thr Lys Gln
65 70 75 80

Arg Ala Gln Glu Ala Leu Leu Gln Leu Ser Gln Ala Leu Ser Leu Met
85 90 95

Glu Thr Val Lys Gln Gly Val Asp Gln Lys Leu Val Glu Gly Gln Glu
100 105 110

Lys Leu His Gln Met Trp Leu Ser Trp Asn Gln Lys Gln Leu Gln Gly
115 120 125

Pro Glu Lys Glu Pro Pro Lys Pro Glu Gln Val Glu Ser Arg Ala Leu
130 135 140

Thr Met Phe Arg Asp Ile Ala Gln Gln Leu Gln Ala Thr Cys Thr Ser
145 150 155 160

Leu Gly Ser Ser Ile Gln Gly Leu Pro Thr Asn Val Lys Asp Gln Val
165 170 175

Gln Gln Ala Arg Arg Gln Val Glu Asp Leu Gln Ala Thr Phe Ser Ser
180 185 190

Ile His Ser Phe Gln Asp Leu Ser Ser Ser Ile Leu Ala Gln Ser Arg
195 200 205

Glu Arg Val Ala Ser Ala Arg Glu Ala Leu Asp His Met Val Glu Tyr
210 215 220

Val Ala Gln Asn Thr Pro Val Thr Trp Leu Val Gly Pro Phe Ala Pro
225 230 235 240

Gly Ile Thr Glu Lys Ala Pro Glu Glu Lys Lys
245 250

<210> 11
<211> 434
<212> PRT
<213> Homo sapiens

<220>
<223> Cargo selection protein TIP47 (47 kDa mannose 6-phosphate receptor-binding protein) (47 kDa MPR-binding protein) (Placental protein 17)

<400> 11

Met Ser Ala Asp Gly Ala Glu Ala Asp Gly Ser Thr Gln Val Thr Val
1 5 10 15

Glu Glu Pro Val Gln Gln Pro Ser Val Val Asp Arg Val Ala Ser Met
20 25 30

Pro Leu Ile Ser Ser Thr Cys Asp Met Val Ser Ala Ala Tyr Ala Ser
35 40 45

Thr Lys Glu Ser Tyr Pro His Val Lys Thr Val Cys Asp Ala Ala Glu
50 55 60

Lys Gly Val Arg Thr Leu Thr Ala Ala Ala Val Ser Gly Ala Gln Pro
65 70 75 80

Ile Leu Ser Lys Leu Glu Pro Gln Ile Ala Ser Ala Ser Glu Tyr Ala
85 90 95

His Arg Gly Leu Asp Lys Leu Glu Glu Asn Leu Pro Ile Leu Gln Gln
100 105 110

Pro Thr Glu Lys Val Leu Ala Asp Thr Lys Glu Leu Val Ser Ser Lys
115 120 125

Val Ser Gly Ala Gln Glu Met Val Ser Ser Ala Lys Asp Thr Val Ala
130 135 140

Thr Gln Leu Ser Glu Ala Val Asp Ala Thr Arg Gly Ala Val Gln Ser
145 150 155 160

Gly Val Asp Lys Thr Lys Ser Val Val Thr Gly Gly Val Gln Ser Val
165 170 175

Met Gly Ser Arg Leu Gly Gln Met Val Leu Ser Gly Val Asp Thr Val
180 185 190

Leu Gly Lys Ser Glu Glu Trp Ala Asp Asn His Leu Pro Leu Thr Asp
195 200 205

Ala Glu Leu Ala Arg Ile Ala Thr Ser Leu Asp Gly Phe Asp Val Ala
210 215 220

Ser Val Gln Gln Gln Arg Gln Glu Gln Ser Tyr Phe Val Arg Leu Gly
225 230 235 240

Ser Leu Ser Glu Arg Leu Arg Gln His Ala Tyr Glu His Ser Leu Gly
245 250 255

Lys Leu Arg Ala Thr Lys Gln Arg Ala Gln Glu Ala Leu Leu Gln Leu
260 265 270

Ser Gln Ala Leu Ser Leu Met Glu Thr Val Lys Gln Gly Val Asp Gln
275 280 285

Lys Leu Val Glu Gly Gln Glu Lys Leu His Gln Met Trp Leu Ser Trp
290 295 300

Asn Gln Lys Gln Leu Gln Gly Pro Glu Lys Glu Pro Pro Lys Pro Glu
305 310 315 320

Gln Val Glu Ser Arg Ala Leu Thr Met Phe Arg Asp Ile Ala Gln Gln
325 330 335

Leu Gln Ala Thr Cys Thr Ser Leu Gly Ser Ser Ile Gln Gly Leu Pro
340 345 350

Thr Asn Val Lys Asp Gln Val Gln Gln Ala Arg Arg Gln Val Glu Asp
355 360 365

Leu Gln Ala Thr Phe Ser Ser Ile His Ser Phe Gln Asp Leu Ser Ser
370 375 380

Ser Ile Leu Ala Gln Ser Arg Glu Arg Val Ala Ser Ala Arg Glu Ala
385 390 395 400

Leu Asp His Met Val Glu Tyr Val Ala Gln Asn Thr Pro Val Thr Trp
405 410 415

Leu Val Gly Pro Phe Ala Pro Gly Ile Thr Glu Lys Ala Pro Glu Glu
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Lys Lys

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<212> PRT
<213> Homo sapiens

<220>

<223> Sequence 1 from patent US 5989820

<400> 12

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Glu Glu Pro Val Gln Gln Pro Ser Val Val Asp Arg Val Ala Ser Met
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Pro Leu Ile Ser Ser Thr Cys Asp Met Val Ser Ala Ala Tyr Ala Ser
35 40 45

Thr Lys Glu Ser Tyr Pro His Val Lys Thr Val Cys Asp Ala Ala Glu
50 55 60

Lys Gly Val Arg Thr Leu Thr Ala Ala Val Ser Gly Ala Gln Pro
65 70 75 80

Ile Leu Ser Lys Leu Glu Pro Gln Ile Ala Ser Ala Ser Glu Tyr Ala
85 90 95

His Arg Gly Leu Asp Lys Leu Glu Glu Asn Leu Pro Ile Leu Gln Gln
100 105 110

Pro Thr Glu Lys Val Leu Ala Asp Thr Lys Glu Leu Val Ser Ser Lys
115 120 125

Val Ser Gly Ala Gln Glu Met Val Ser Ser Ala Lys Asp Thr Val Ala
130 135 140

Thr Gln Leu Ser Glu Ala Val Asp Ala Thr Arg Gly Ala Val Gln Ser
145 150 155 160

Gly Val Asp Lys Thr Lys Ser Val Val Thr Gly Gly Val Gln Ser Val

165

170

175

Met Gly Ser Arg Leu Gly Gln Met Val Leu Ser Gly Val Asp Thr Val
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Leu Gly Lys Ser Glu Glu Trp Ala Asp Asn His Leu Pro Leu Thr Asp
195 200 205

Ala Glu Leu Ala Arg Ile Ala Thr Ser Leu Asp Gly Phe Asp Val Ala
210 215 220

Ser Val Gln Gln Gln Arg Gln Glu Gln Ser Tyr Phe Val Arg Leu Gly
225 230 235 240

Ser Leu Ser Glu Arg Leu Arg Gln His Ala Tyr Glu His Ser Leu Gly
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Lys Leu Arg Ala Thr Lys Gln Arg Ala Gln Glu Ala Leu Leu Gln Leu
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Ser Gln Ala Leu Ser Leu Met Glu Thr Val Lys Gln Gly Val Asp Gln
275 280 285

Lys Leu Val Glu Gly Gln Glu Lys Leu His Gln Met Trp Leu Ser Trp
290 295 300

Asn Gln Lys Gln Leu Gln Gly Pro Glu Lys Glu Pro Pro Lys Pro Glu
305 310 315 320

Gln Val Glu Ser Arg Ala Leu Thr Met Phe Arg Asp Ile Ala Gln Gln
325 330 335

Leu Gln Ala Thr Cys Thr Ser Leu Gly Ser Ser Ile Gln Gly Leu Pro
340 345 350

Thr Asn Val Lys Asp Gln Val Gln Gln Ala Arg Arg Gln Val Glu Asp
355 360 365

Leu Gln Ala Thr Phe Ser Ser Ile His Ser Phe Gln Asp Leu Ser Ser
370 375 380

Ser Ile Leu Ala Gln Ser Arg Glu Arg Val Ala Ser Ala Arg Glu Ala
385 390 395 400

Leu Asp His Met Val Glu Tyr Val Ala Gln Asn Thr Pro Val Thr Trp
405 410 415

Leu Val Gly Pro Phe Ala Pro Gly Ile Thr Glu Lys Ala Pro Glu Glu
420 425 430

Lys Lys

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<212> DNA
<213> Homo sapiens

<220>
<223> Cargo selection protein (mannose 6 phosphate receptor binding protein) (TIP47), mRNA

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<211> 1305
<212> DNA
<213> Homo sapiens

<220>
<223> Placental protein 17b1 (PP17) mRNA, complete cds

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<211> 756
<212> DNA
<213> Homo sapiens

<220>
<223> Placental protein 17a2 (PP17) mRNA, complete cds

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<210> 17
<211> 1305
<212> DNA
<213> Homo sapiens

<220>
<223> Cargo selection protein (mannose 6 phosphate receptor binding protein), clone MGC:11117 IMAGE:3833411, mRNA, complete cds

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<211> 1305
<212> DNA
<213> Homo sapiens

<220>
<223> Cargo selection protein (mannose 6 phosphate receptor binding protein), clone MGC:3816 IMAGE:2905275, mRNA, complete cds

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<211> 1305
<212> DNA
<213> Homo sapiens

<220>
<223> Cargo selection protein TIP47 (TIP47) mRNA, complete cds

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<211> 1305
<212> DNA
<213> Homo sapiens

<220>
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<210> 21
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<212> DNA
<213> Homo sapiens

<220>
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